OIPE IAP89
MAR 10 2006
PATENT & TRADEMARK OFFICE

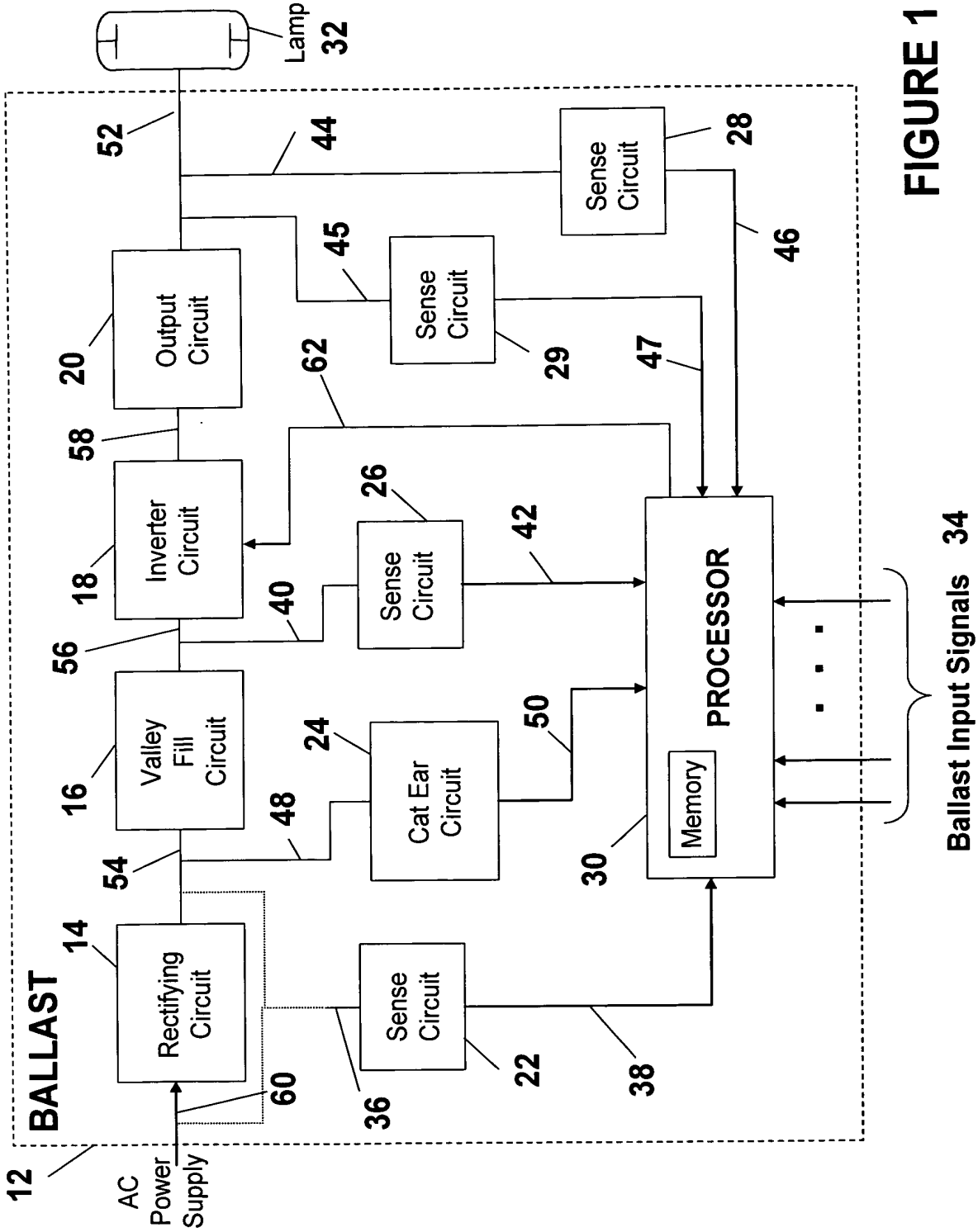

FIGURE 1

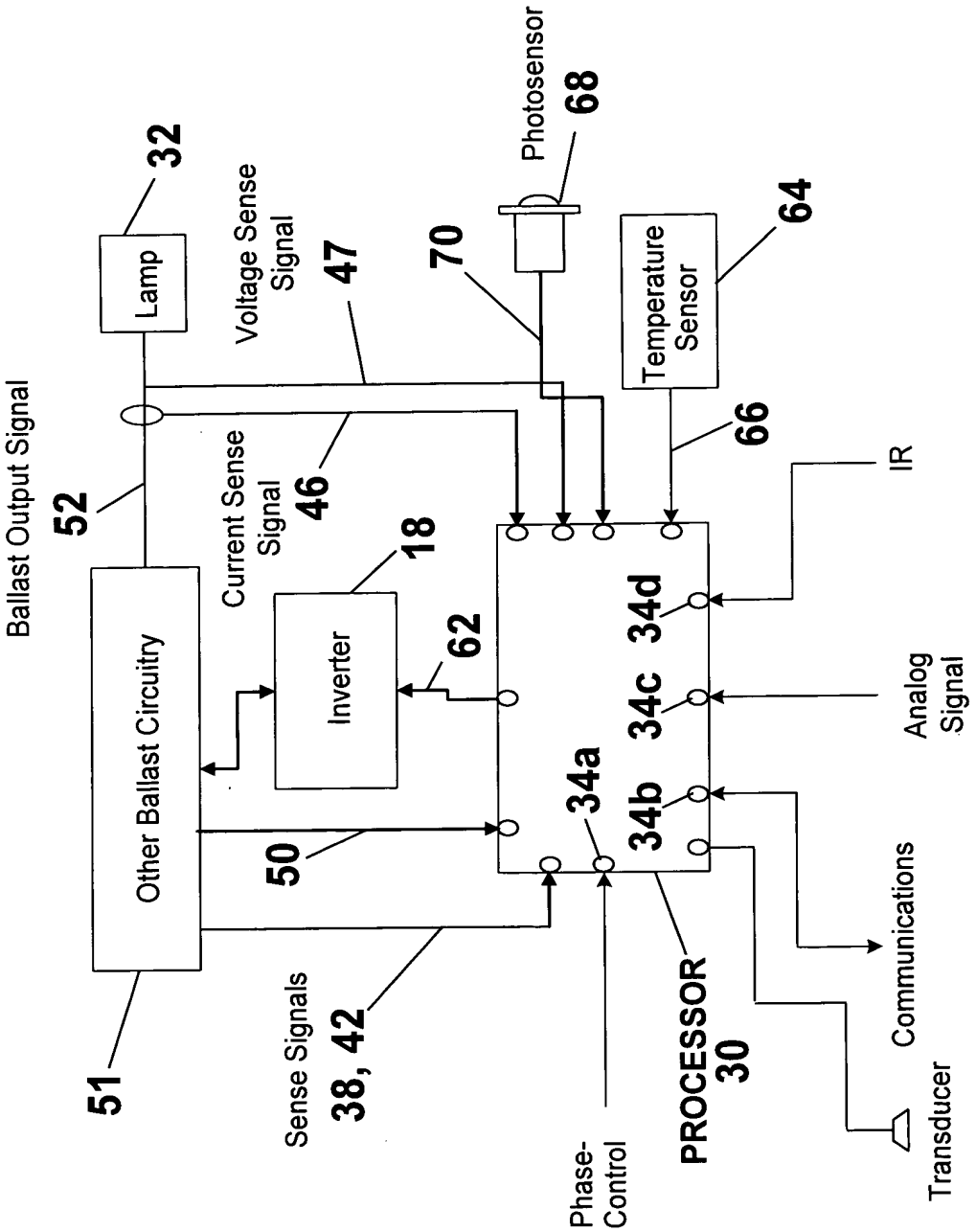
Lamp
32
Voltage Sense Signal
47
Photosensor
68
70
Temperature Sensor
64
Ballast Output Signal
52
Current Sense Signal
46
66
IR
18
Inverter
62
34d
34c
Analog Signal
Other Ballast Circuitry
34a
34b
50
Communications
Sense Signals
38, 42
PROCESSOR
30
Phase-Control
Transducer
51

FIGURE 2

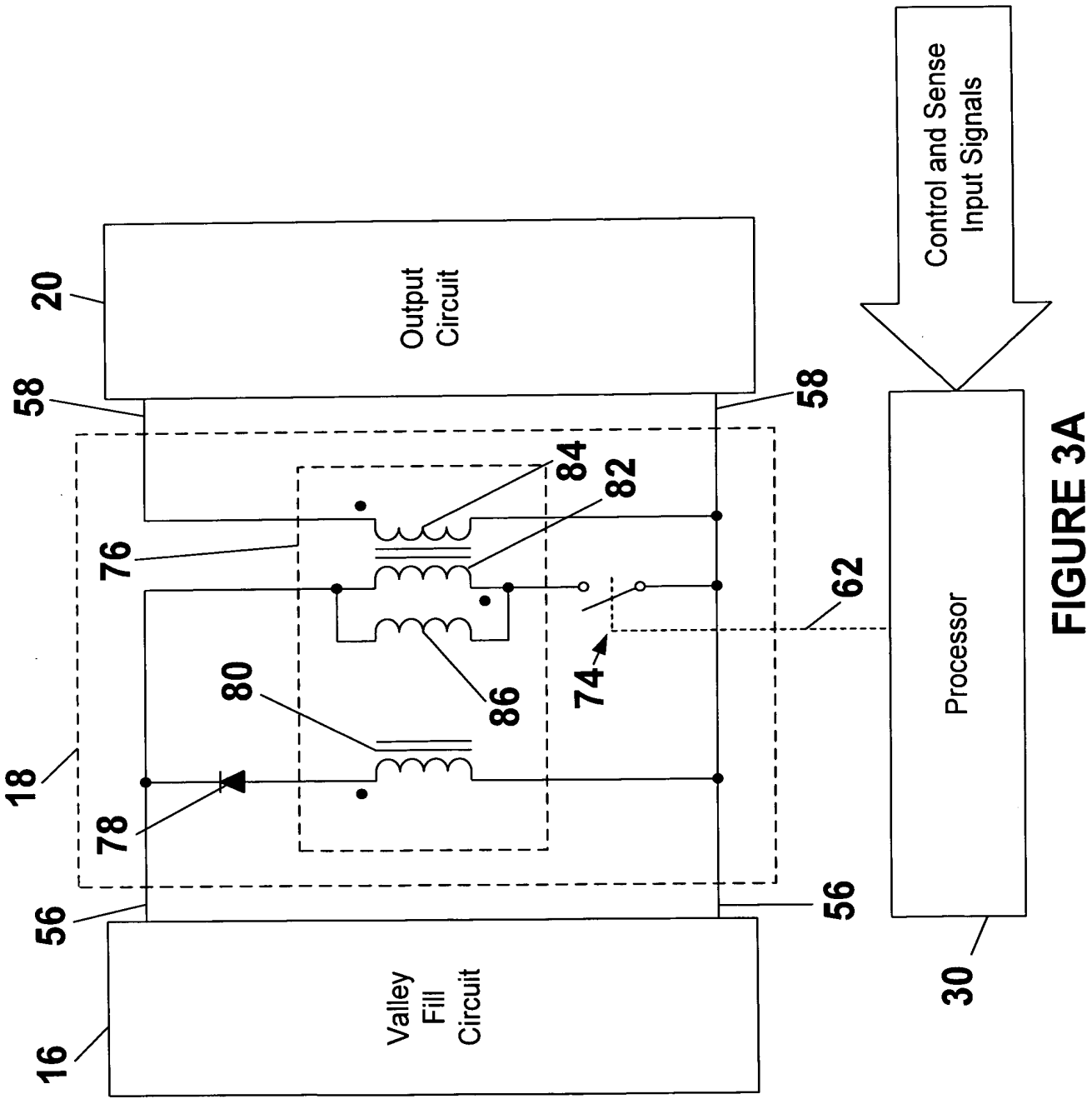
Control and Sense Input Signals
Output Circuit
Valley Fill Circuit
Processor
20
58
58
84
82
76
62
80
86
74
18
78
56
56
16
30

FIGURE 3A

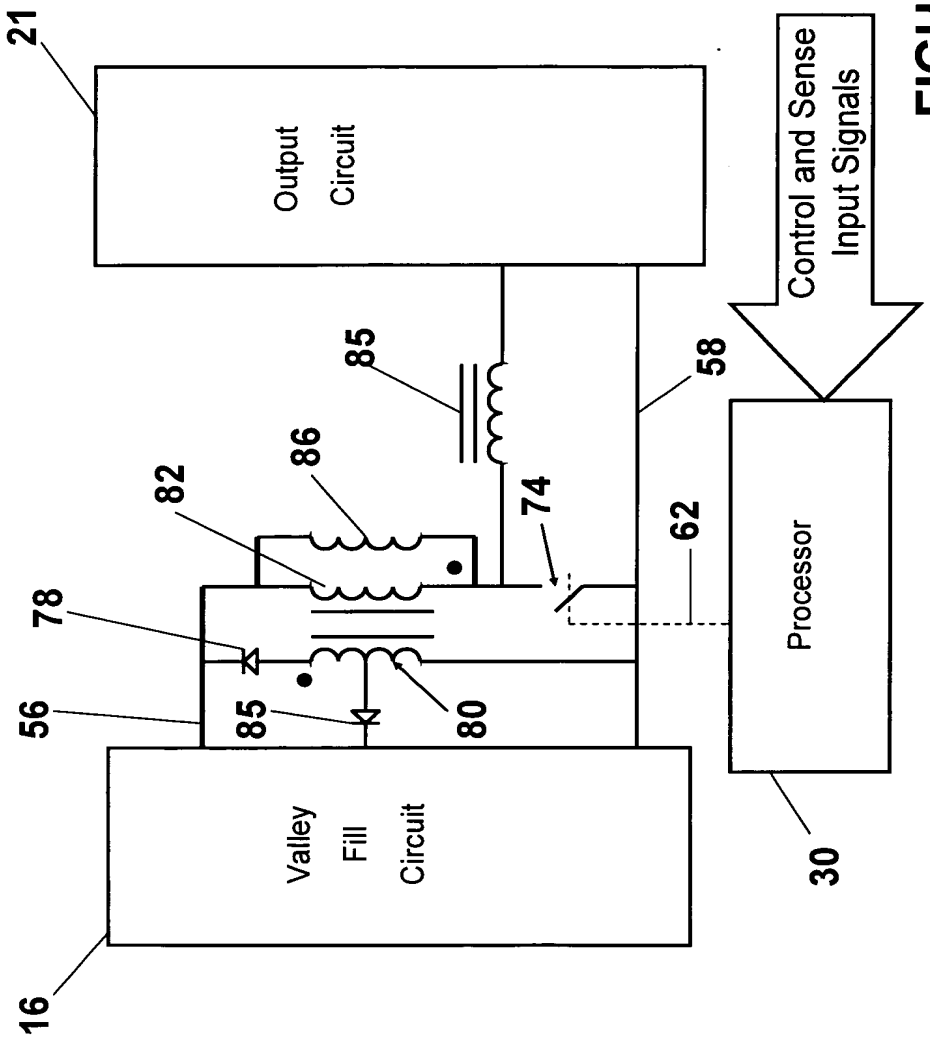
21
Output Circuit
Control and Sense Input Signals
85
58
86
82
74
62
78
Processor
56
85
80
Valley Fill Circuit
30
16

FIGURE 3B

PROCESSOR CONTROLLED BALLAST STATES

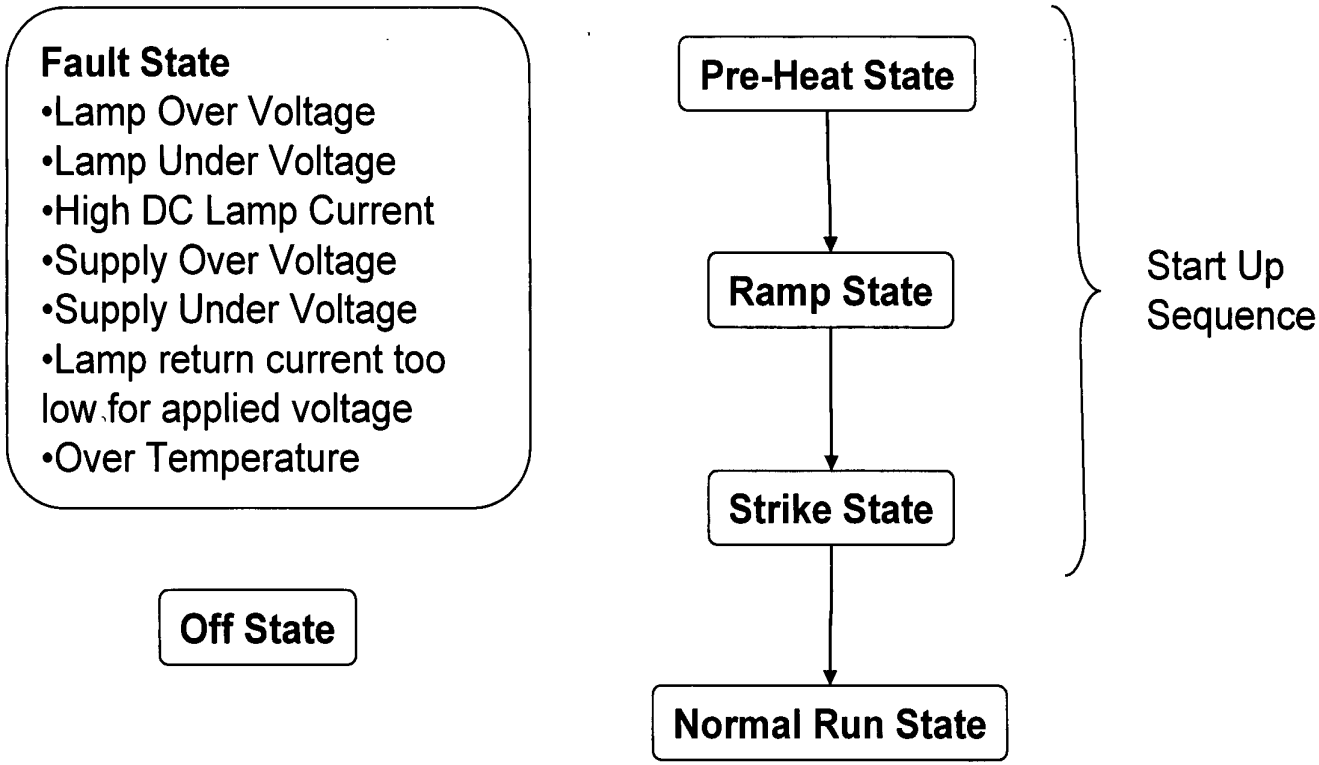

FIGURE 4

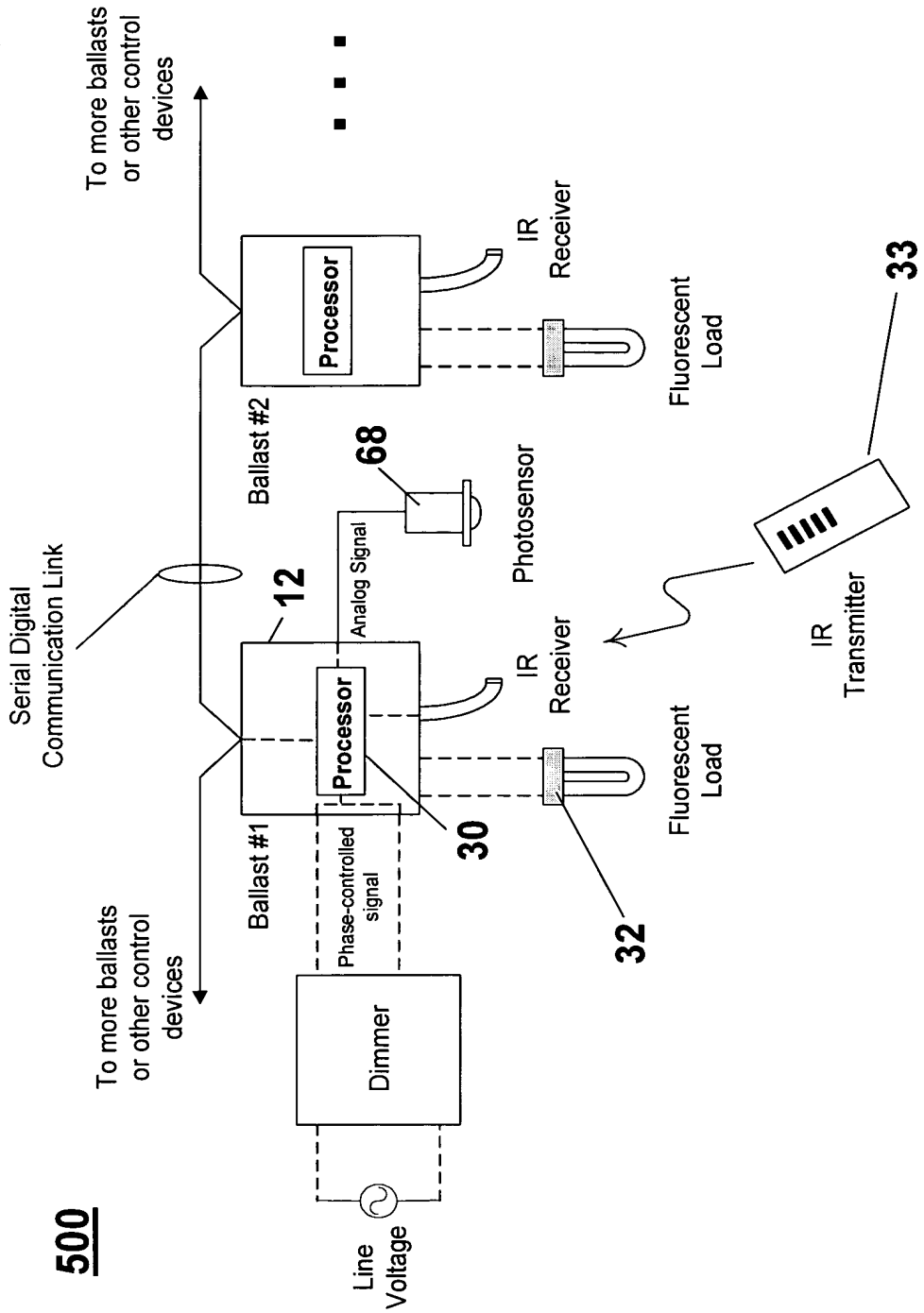
500
To more ballasts or other control devices
To more ballasts or other control devices
Serial Digital Communication Link
Ballast #1
Ballast #2
12
Processor
Processor
Analog Signal
Phase-controlled signal
Dimmer
Line Voltage
68
Photosensor
30
32
IR Receiver
IR Receiver
IR Transmitter
33
Fluorescent Load
Fluorescent Load

FIGURE 5

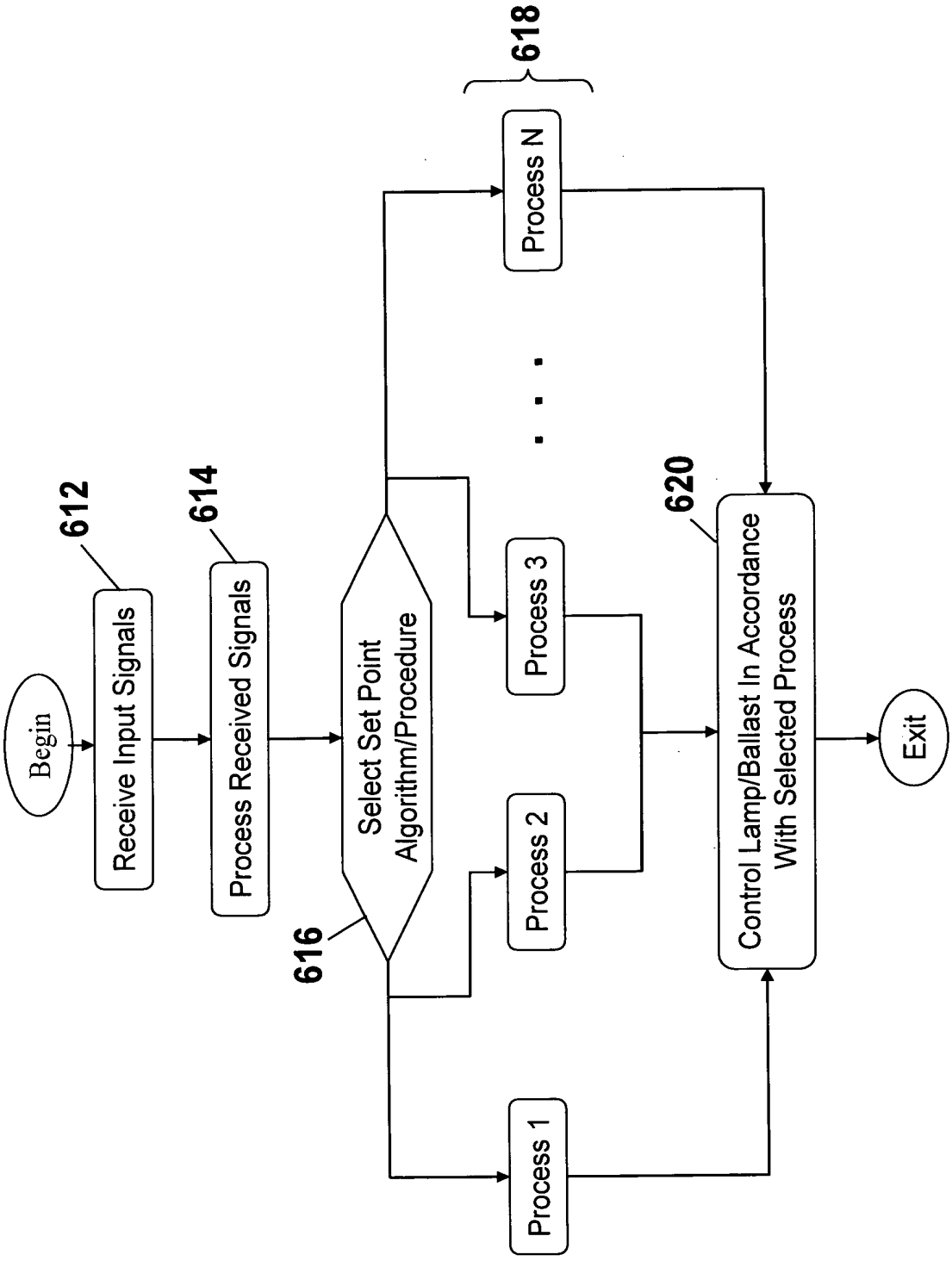
Begin
Receive Input Signals
612
Process Received Signals
614
Select Set Point Algorithm/Procedure
616
Process 1
Process 2
Process 3
Process N
618
Control Lamp/Ballast In Accordance With Selected Process
620
Exit

FIGURE 6

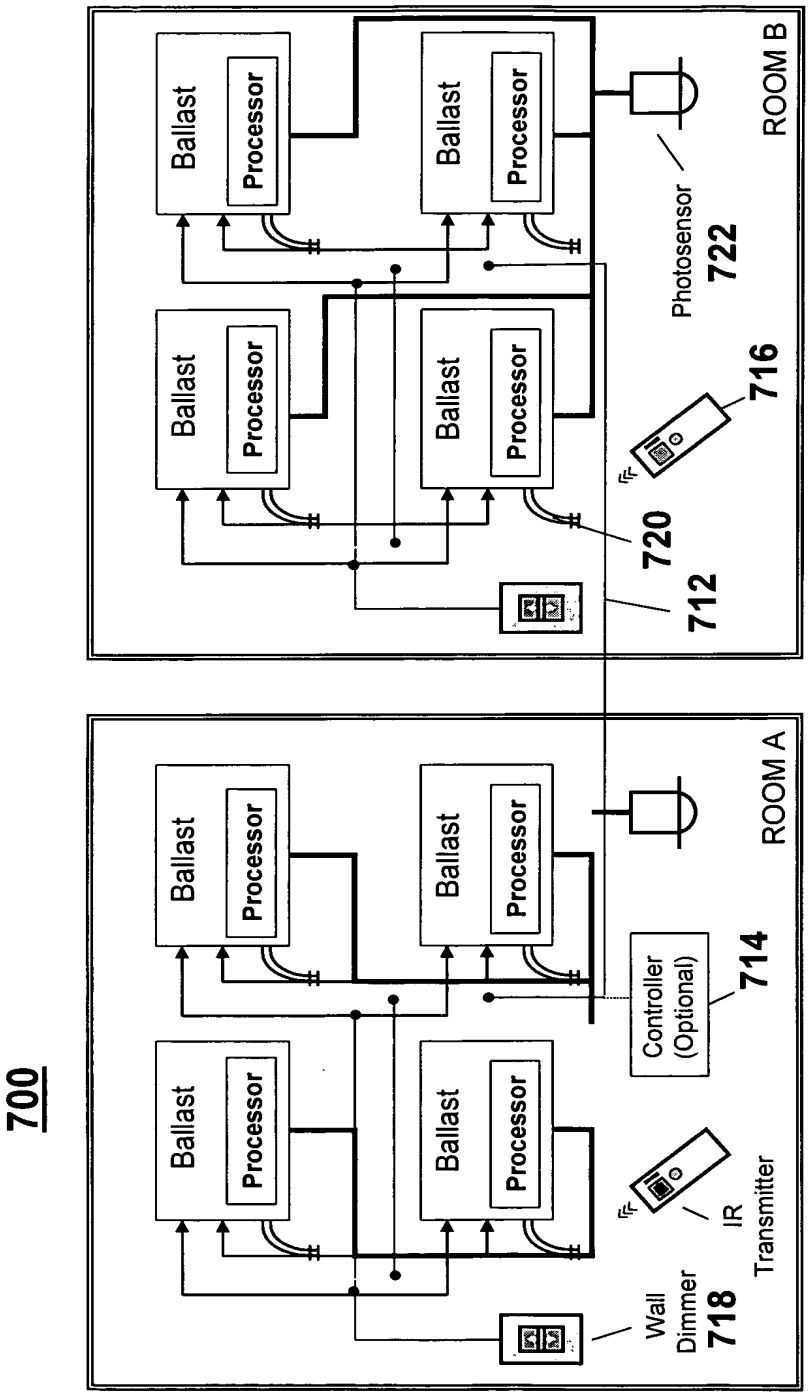
700
ROOM A
ROOM B
Ballast
Processor
Controller (Optional)
714
IR Transmitter
Wall Dimmer
718
Photosensor
722
716
720
712

FIGURE 7

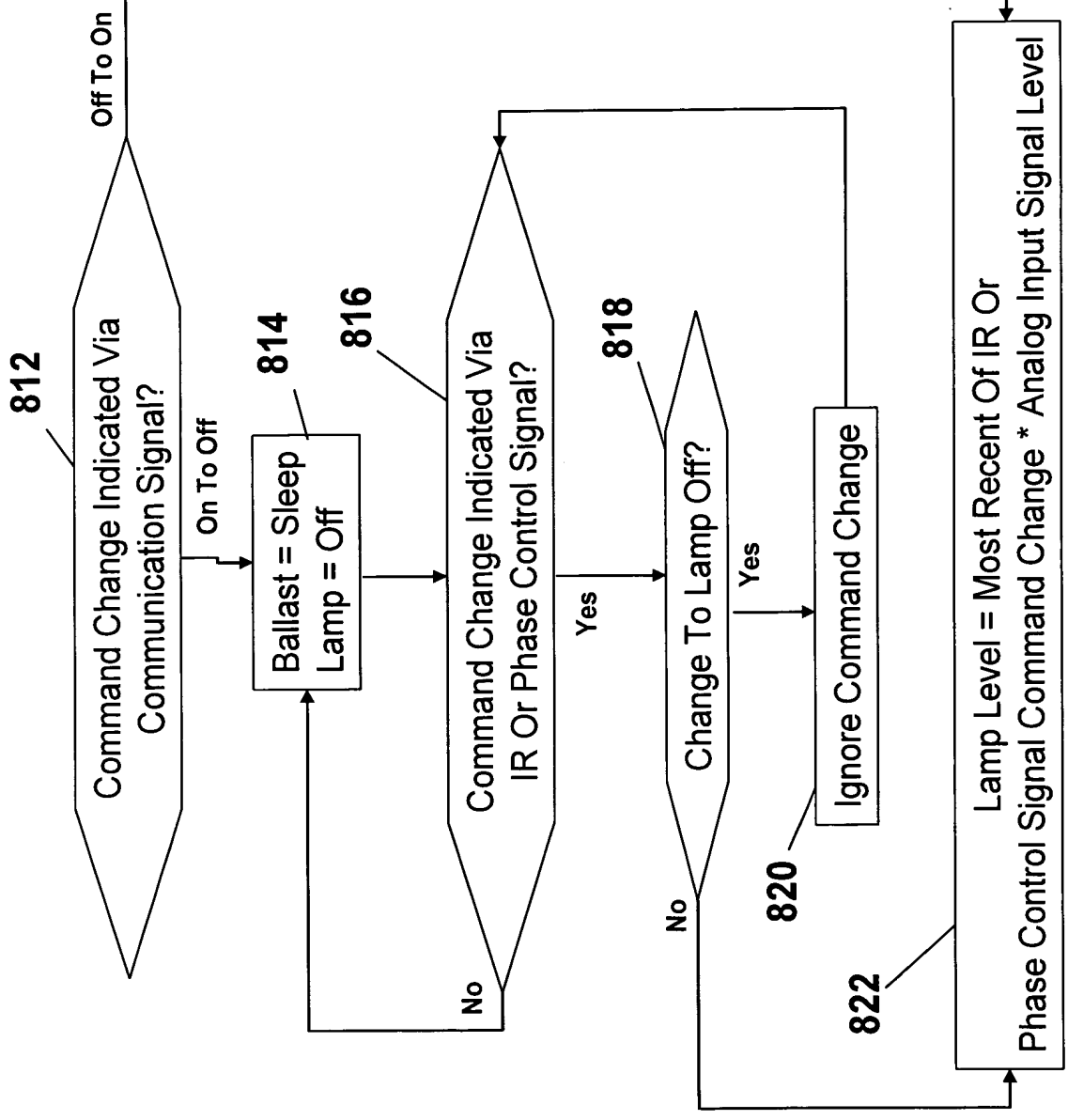
812
Command Change Indicated Via Communication Signal?
Off To On
On To Off
814
Ballast = Sleep
Lamp = Off
816
Command Change Indicated Via IR Or Phase Control Signal?
No
Yes
818
Change To Lamp Off?
No
Yes
820
Ignore Command Change
822
Lamp Level = Most Recent Of IR Or Phase Control Signal Command Change * Analog Input Signal Level

FIGURE 8

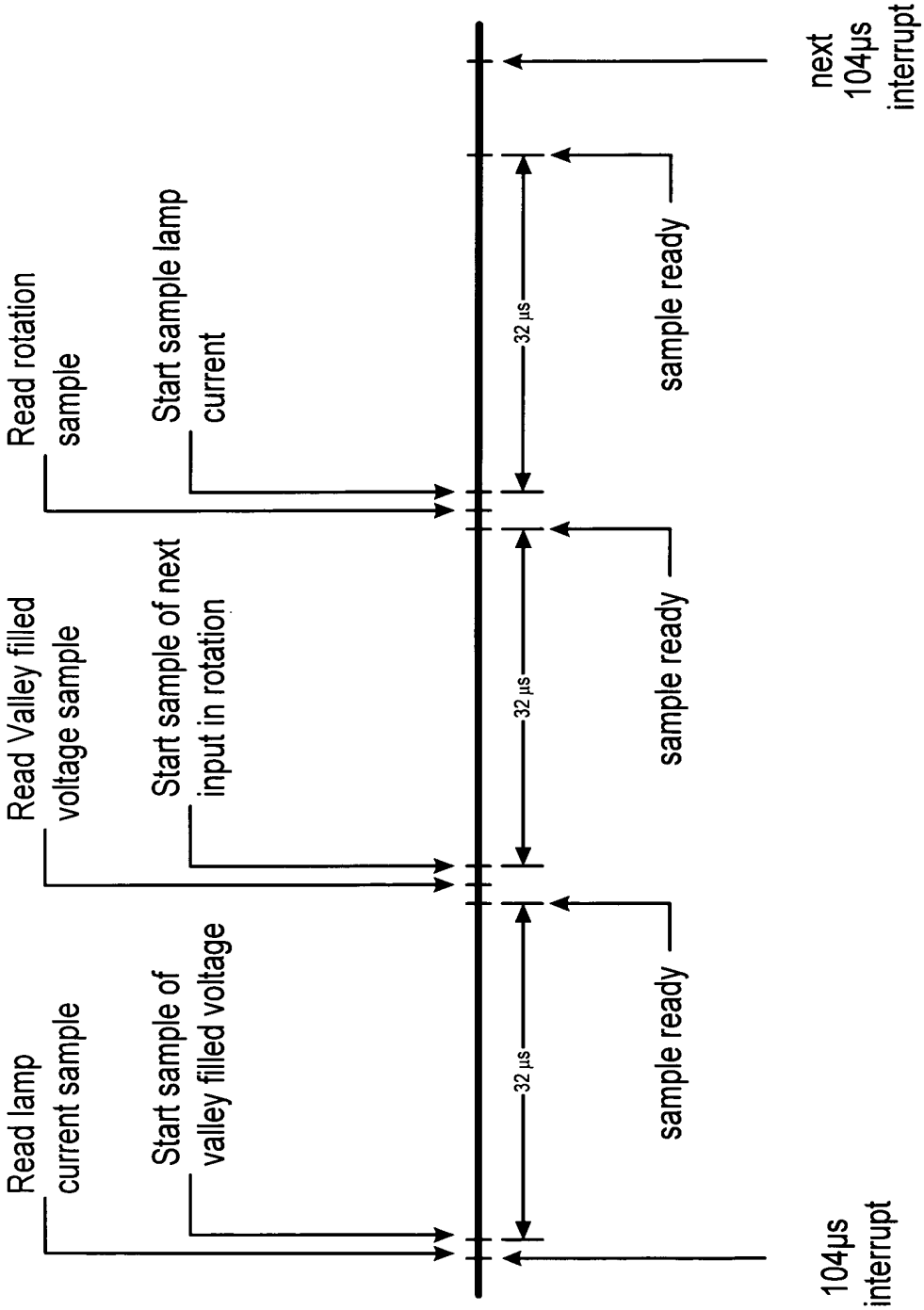
Read lamp current sample
Start sample of valley filled voltage
Read Valley filled voltage sample
Start sample of next input in rotation
Read rotation sample
Start sample lamp current
32 µs
32 µs
32 µs
sample ready
sample ready
sample ready
104µs interrupt
next 104µs interrupt

FIGURE 9

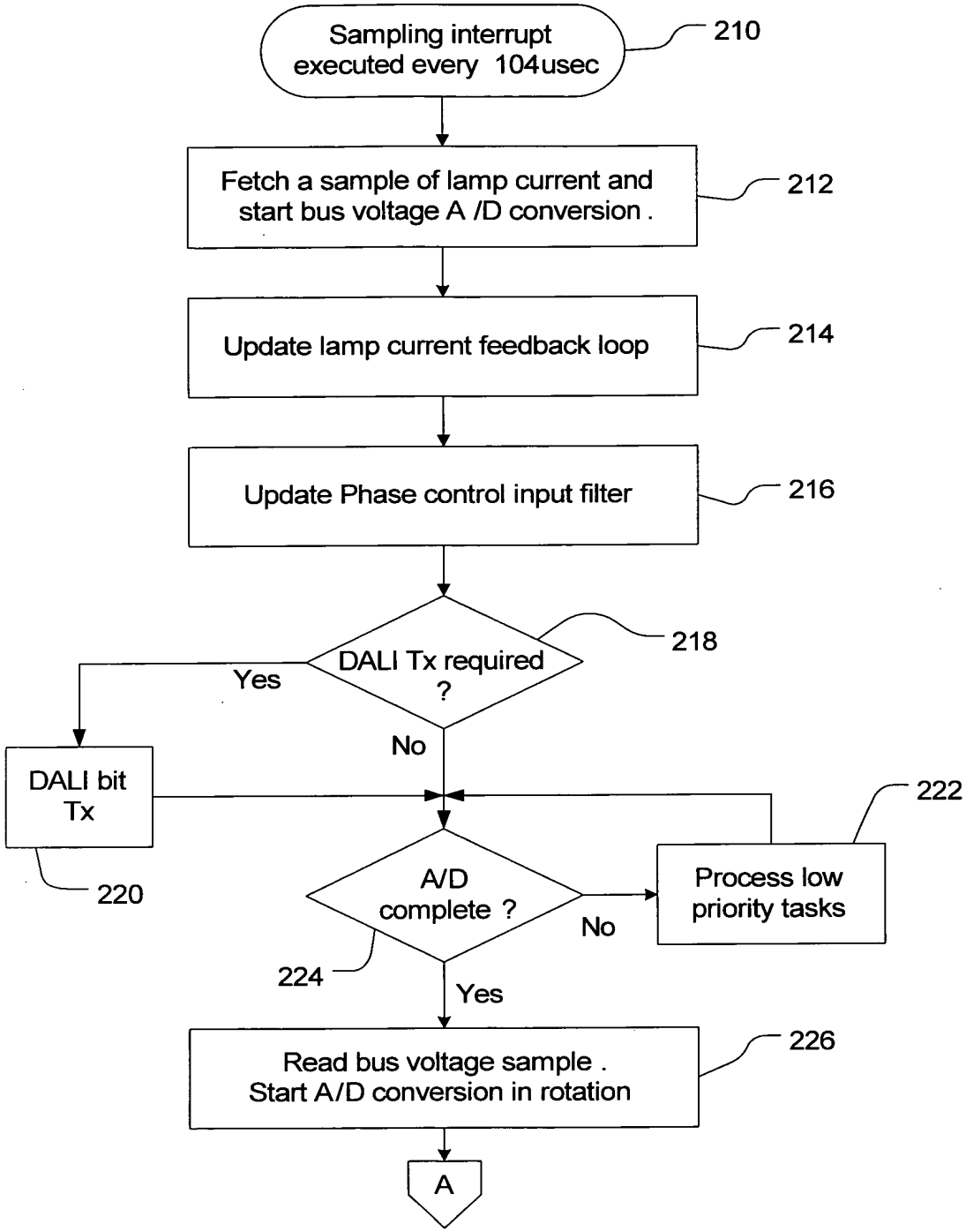
Sampling interrupt executed every 104usec
210
Fetch a sample of lamp current and start bus voltage A /D conversion .
212
Update lamp current feedback loop
214
Update Phase control input filter
216
DALI Tx required ?
218
Yes
No
DALI bit Tx
220
A/D complete ?
No
Process low priority tasks
222
224
Yes
Read bus voltage sample . Start A/D conversion in rotation
226
A

FIGURE 10A

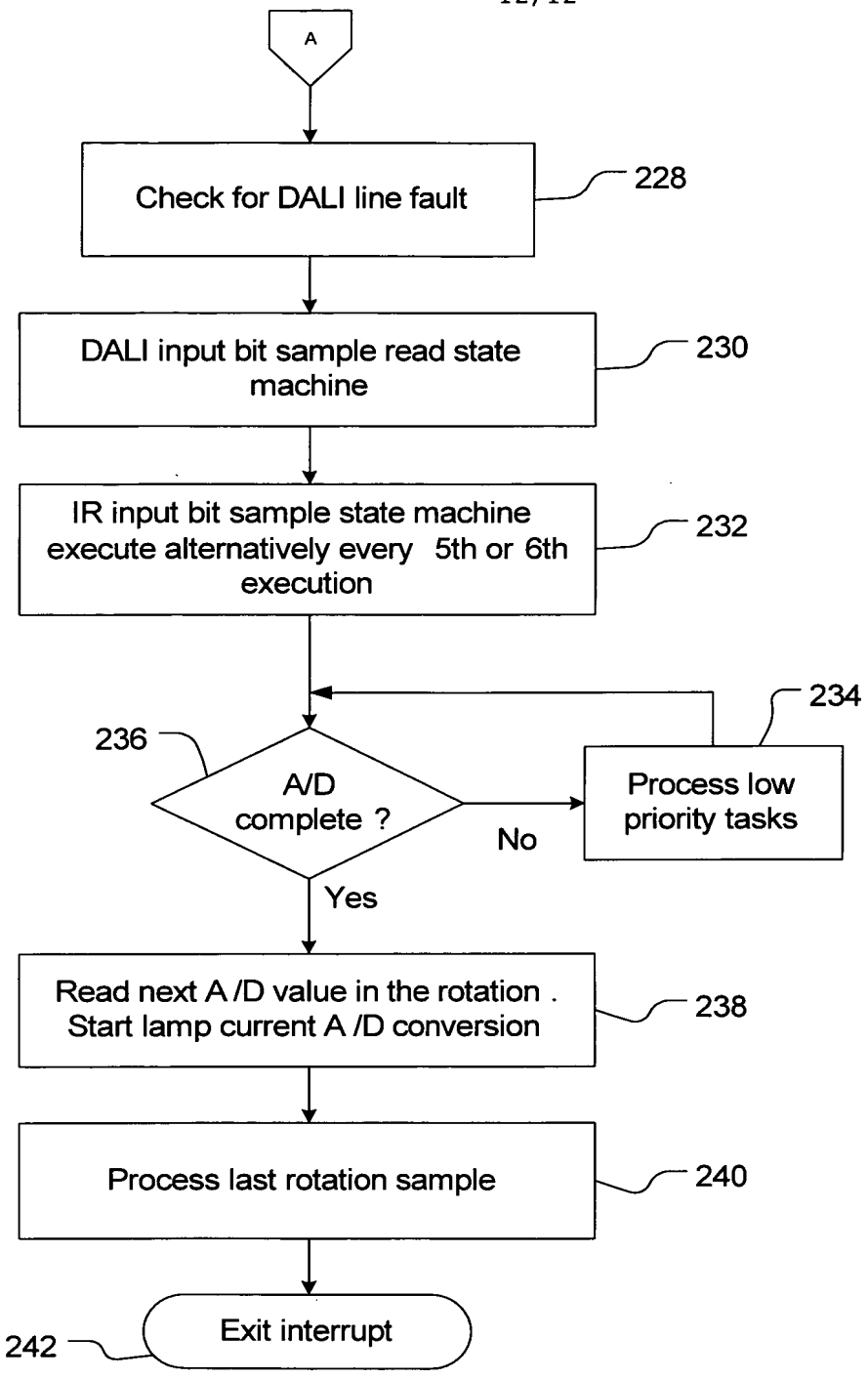
A
Check for DALI line fault
228
DALI input bit sample read state machine
230
IR input bit sample state machine execute alternatively every 5th or 6th execution
232
234
236
A/D complete ?
No
Process low priority tasks
Yes
Read next A /D value in the rotation . Start lamp current A /D conversion
238
Process last rotation sample
240
Exit interrupt
242

FIGURE 10B